

No Solution / All Real #'s

Solution: is the point where the two lines intersect.

false statement

No Solution: the lines never intersect. They are parallel.

Answer: No Solution
 \emptyset

true statement:

- not actually ARN
- But there are an infinite # of solutions
- they are on top of each other

THEY ARE THE SAME LINE !!

Answer: the eq of the line
 $y = mx + b$

$$\begin{aligned} (-3x + 5y = -6) & \cdot 6 \\ (6x - 10y = 12) & \cdot 3 \end{aligned}$$

$$\begin{array}{r} -18x + 30y = -36 \\ + 18x - 30y = 36 \\ \hline 0 = 0 \end{array}$$

$$\begin{array}{r} -3x + 5y = -6 \\ +3x \qquad \qquad +3x \end{array}$$

$$\frac{5y}{5} = \frac{3x}{5} - \frac{6}{5}$$

$$y = \frac{3}{5}x - \frac{6}{5}$$

$$2(y-x) = 5 + 2x$$

$$2(y+x) = 5 - 2y$$

$$2y - \overset{-2x}{2x} = 5 + \overset{-2x}{2x}$$

$$\begin{array}{r} 2y + 2x = 5 - 2y \\ +2y \qquad \qquad \qquad +2y \end{array}$$

$$\begin{array}{l} (2y - 4x = 5) \cdot 4 \\ (4y + 2x = 5) \cdot (-2) \end{array}$$

$$\begin{array}{r} 8y - 16x = 20 \\ -8y - 4x = -10 \end{array}$$

$$-20x = 10$$

$$x = -\frac{1}{2}$$

$$8y - 16\left(-\frac{1}{2}\right) = 20$$

$$\begin{array}{r} 8y + 8 = 20 \\ -8 \end{array}$$

$$\frac{8y = 12}{8}$$

$$y = \frac{3}{2}$$

$$\boxed{\left(-\frac{1}{2}, \frac{3}{2}\right)}$$

$$\begin{array}{r} -3x \quad \quad \quad -3x \\ 3x - 2y = x + 8 \\ \quad y = x - 4 \\ \quad -2y = -2x + 8 \\ \hline \quad \quad \quad 2 \end{array}$$

$$\begin{array}{r} -y = -x + 4 \\ + y = x - 4 \\ \hline 0 = 0 \end{array}$$

$$y = x - 4$$